REMARKS

I. Status of the Application

Claims 1-23 were filed in the original application. In the Response to the Restriction Requirement mailed June 13, 2006, claims 1-12 were cancelled. In the Amendment and Response to the Office Action mailed May 3, 2007, claims 15-19, 22, and 23 were cancelled, and claims 13, 14, 20 and 21 were amended. In the present Amendment and Response to Final Office Action of December 31, 2004 claim 13 is amended for clarity, claim 14 is amended to correct punctuation, and claim 27 is added. The Applicants note that all amendments of claims are made without acquiescing to any of the Examiner's arguments or rejections, and solely for the purpose of expediting the patent application process in a manner consistent with the PTO's Patent Business Goals (PBG),[1] and without waiving the right to prosecute the amended or cancelled claims (or similar claims) in the future.

In the present Amendment and Response to the Final Office Action mailed December 31, 2007, claim 27 is newly added. Support for newly added claim 27 may be found throughout the Specification at, for example, Example 6, page 78 and Example 7, page 79.

Thus, claims 13, 14, 20, 21 and 24-27 are currently pending in the application.

In the Final Office Action of December 31, 2007 there is 1 objection to the Specification, and there are 2 rejections. The currently objection and rejections are:

1. The Examiner notes that SEQ ID NO: 8 of Table I. on page 84 is not in compliance because the specification recites that this sequence refers to amino acids 425- to 439.

2. Claim 13 and dependent claims 14, 20-21, and 24-26 are rejected under 35 U.S.C. 112, second paragraph, as allegedly being indefinite for

1 65 Fed. Reg. 54603 (Sept. 8, 2000).

failing to particularly point out and distinctly claim the subject matter which the Applicants regard as the invention.

3. Claims 13-14, 20-21, and 24-26 are rejected under 35 U.S.C. 112, first paragraph, as allegedly failing to comply with the enablement requirement

II. In the Specification

Sequence Compliance

In the Final Office Action of December 31, 2007 the Examiner notes that:

"Sequence identification numbers have been added to Table I on page 84 of the disclosure, however SEQ ID NO: 8 is not in compliance because the specification recites that this sequence refers to amino acids 425 to 439. See page 5 of the response filed 10/5/07. This is not consistent with the sequence listing submitted 11/24/06 and the CRFE entered 11/29/06. It is suggested that the specification is corrected to indicate that SEQ ID NO: 8 "refers to amino acids 425 to **440**." (Final Office Action of December 31, 2007, page 3.) (Emphasis in original.)

Accordingly, Table I is amended herein to read "SEQ ID NO: 8 refers to amino acids 425 to 440."

III. Rejections

A. Claim 13 is Definite

In the Office Action of December 31, 2007 the Examiner notes:

"Claim 13 is directed to a method for pathogen killing in a subject. The method steps (a-b) merely recite a subject, a pathogen, and the administration of anti-vimentin antibody. However, the relationship of the pathogen and the subject is not known. This makes the claims vague and indefinite. It is not clear if the pathogen is present within the subject prior to antibody administration, if Applicant intends to administer a pathogen to the subject, or if the pathogen is a part of the claimed method. It is suggested that the relationship of the pathogen in the claimed method be clearly set forth in order to obviate this rejection." (Final Office Action of December 31, 2007, page 4.)

The Applicants respectfully disagree with the Examiner's assertion. However, in order to further the business interests of the Applicants, and while reserving the right to prosecute that original (or similar) claims in the future, the Applicants have amended claim 13 to read "a) providing: i) a pathogen; ii) a subject having said pathogen; and iii) an anti-vimentin antibody; and b) administering said anti-vimentin antibody to said subject having said pathogen under conditions such that said administering reduces the risk of mortality."

In view of the above, the Applicants request that this rejection be withdrawn.

2. Claims 13-14, 20-21 and 24-26 are Enabled

In the Final Office Action of December 31, 2007 the Examiner notes:

"Specifically, the claims are drawn to a method of administering an anti-vimentin antibody to any and all subjects to treat a bacterial pathogen. This reads on *in vivo* vaccine procedures and the disclosure does not have support for this type of protocol." (Final Office Action of December 31, 2007, page 5).

In the present Amendment and Response to Final Office Action of December 31, 2007 the Applicants have amended claim 13 (See Section III.A. above). Claim 13 is not limited to any mechanism of action, for example, vaccination. In the present application,

the steps of 1. providing a subject with a pathogen, 2. providing anti-vimentin antibody, and 3. administering the anti-vimentin antibody to the subject with a pathogen are clearly described in the Specification, and readily practiced using the teachings of the application. Clearly, data in the application supports the success of the claimed methods *e.g.*, Experimental Examples 6 and 7.

In the Final Office Action of December 31, 2007 the Examiner notes:

> "The specification also exemplifies reduced *E. coli* septicemia and mortality. However, this reduction appears to be seen if anti-vimentin antibodies are administered 15 min prior to *E. coli* injection. See examples 6 and 7 on pages 78-79. These teachings do not enable one skilled in the art to effectively practice a method for pathogen killing in a subject as set forth in the instant claims." (Final Office Action of December 31, 2007, page 5.)

The Applicants respectfully disagree with the Examiner's assertion. For example, Experimental Example 6 shows that 9 hours after intraperitoneal injection of a lethal dose of *E. coli*, survival in vimentin knockout mice is double that of control mice. Similarly, Experimental Example 7 shows that anti-vimentin antibodies protect subjects from fatal intraperitoneal infection with lethal doses of *E. coli* in a well-characterized *in vivo* model of bacterial sepsis. Accordingly, the Specification provides explicit support for the methods of reducing mortality in a subject having a pathogen of the presently claimed invention *i.e.*, administration of anti-vimentin antibodies.

In view of the above, the Applicants request that this rejection be withdrawn.

In the Final Office Action of December 31, 2007 the Examiner argues:

> "The prior art teaches that the presence of anti-vimentin antibodies is linked to detrimental results in patients. . . . Thus from the prior art teaching the administration of anti-vimentin antibodies to a subject would appear to induce diseases and/or disorders linked to bacterial pathogens." (Final Office Action of December 31, 2007, page 5.)

In making this assertion the Applicants believe that the rejection expresses a number of errors. First, the rejection does not provide statutory, MPEP, case law or other authority for constructing a 112 rejection based on speculations regarding detrimental results of a method in patients.

Second, even if the references were properly cited in a 112 rejection (and they are not), neither Danskine or Yang teach or suggest administration of an anti-vimentin antibody. Danskines's antibodies arise from "de novo production" after cardiac transplantation (Danskine, first paragraph). Yang's antibodies "are formed in some patients with IPF, idiopathic NSIP and NSIP associated with polymyositis/dermatomyositis" (Yang, page 173). Thus, none of the cited references are on point as the detrimental effect observed was related to specific patient types under specific conditions. Nor can the cited references be reasonably extended to make the point raised by the rejection.

Third, even if there were side effects attendant to administration of anti-vimentin antibody (and the Applicants believe that no valid evidence has been presented in support of such an argument), the presence or absence of side effects would not support a lack of enablement. The rejection provides no evidence that administration of anti-vimentin antibody to reduce mortality in pathogen-infected subjects has deleterious side effects. To the contrary, the Specification shows a clear benefit. Thus, the evidence of record does not support the rejection.

In view of the above, the Applicants request that this rejection be withdrawn.

In the Final Office Action of December 31, 2007 the Examiner argues:

> "Further, the specification does not set forth any *in vivo* data showing the protective ability of anti-vimentin antibody to a subject" (Final Office Action of December 31, 2007, page 6.)

The Applicants respectfully disagree. The Applicants direct the Examiner's attention to Example 7, on page 79, and to the Final Office Action of December 31, 2007 itself:

> "The specification exemplifies reduced *E. coli* septicemia and mortality. However, this reduction appears to be seen if anti-vimentin antibodies are administered 15 min prior to an *E. coli* injection." (Final Office Action of December 31, 2007, page 5).

In view of the above, the Applicants request that this rejection be withdrawn.

In the Final Office Action of December 31, 2007 the Examiner argues:

> "However, this is only exemplified in 13 week old mice with lethal dosages of *E. coli* (J-96) wherein mice were injected with goat anti-vimentin serum 15 min prior to *E. coli* (J-96) injection. These particulars are not recited in the instant claims. (Final Office Action of December 31, 2007, page 6.)

The Applicants respectfully disagree with the Examiner's assertion. One skilled in the art finds abundant details for the methods of use of the anti-vimentin antibodies of the presently claimed invention throughout the Specification at, for example, "**II. Secretory Vimentin Antibodies**" line 1, page 37 to line 5 page 40, and "**V. Secretory Vimentin Pharmaceutical Compositions**" line 16, page 63 to line 2, page 68.

In view of the above, the Applicants request that this rejection be withdrawn.

In the Final Office Action of December 31, 2007 the Examiner argues:

> "Also, the specification does not demonstrate that this 38% reduction in mortality is due to pathogen killing. The reduction in mortality may be linked to parameters other than pathogen killing." (Final Office Action of December 31, 2007, page 6.)

The Applicants respectfully disagree with the Examiner's assertion. However, in order to further the business interests of the Applicants, and while reserving the right to prosecute that original (or similar) claims in the future, in the present Amendment and Response to the Final Office Action of December 31, 2007, the Applicants have amended claim 13 to read "administering said anti-vimentin antibody to said subject having said pathogen under conditions such that said administering reduces the risk of mortality."

In view of the above, the Applicants request that this rejection be withdrawn.

In the Final Office Action of December 31, 2007 the Examiner argues:

> "The prior art teaches that species specific antibodies against vimentin have different reactivity. . . . The prior art also teaches that in vitro results can not predict in vivo antibody responses." (Final Office Action of December 31, 2007 page 6.)

The Applicants respectfully disagree with the Examiner's assertions. As the Examiner acknowledges, Experimental Examples 6 and 7 provide explicit and clear cut *in vivo* data. Example 6 shows that a decrement in vimentin prolongs life after injections of lethal doses of *E. coli*. Example 7 shows that specific intervention with anti-vimentin antibody reduces mortality after injections of lethal doses of *E. coli*.

Pallini describes the behavior of brain cancer cells *in vitro*. Pallini does not teach, suggest, or even consider *in vitro* or *in vivo* consequences of anti-vimentin antibody administration on a pathogen or a subject having a pathogen. Bohn describes anti-vimentin antibody reaction patterns on vertebrate cells. Bohn does not teach, suggest, or even consider *in vitro* or *in vivo* consequences of anti-vimentin antibody administration on a pathogen or a subject having a pathogen. Accordingly, nothing in Pallini or Bohn is relevant to whether or not one skilled in the art would be enabled to make and/or use the inventions of the present claims.

In the Final Office Action of December 31, 2007 the Examiner argues:

> "As such the killing of a pathogen via the administration of anti-vimentin antibodies is not apparent and would require undue experimentation. Devoid of results supporting in vivo killing of a pathogen by anti-vimentin antibodies, the skilled artisan would not be able to predict the outcome of the administration of the claimed anti-vimentin antibodies activity, i.e. would not be able to accurately predict if anti-vimentin antibodies agents would be useful in the claimed purpose." (Final Office Action of December 31, 2007, page 6.)

The Applicants respectfully disagree with the Examiner's assertion. However, in order to further the business interests of the Applicants, and while reserving the right to prosecute that original (or similar) claims in the future, in the present Amendment and Response to the Final Office Action of December 31, 2007, the Applicants have amended claim 13 to read "administering said anti-vimentin antibody to said subject having said pathogen under conditions such that said administering reduces the risk of mortality."

In view of the above, the Applicants request that this rejection be withdrawn.

In the Final Office Action of December 31, 2007 the Examiner argues:

> "The agents/drug/antibody/vaccine (having anti-vimentin antibody activity) art is highly unpredictable and the instant specification fails to provide any information that any one of the recited conjugates would provide immunity to a human from a bacterial pathogen." (Final Office Action of December 31, 2007, page 7.)

As discussed above, the claims do not require immunity, and are not limited to a mechanism of action.

In view of the above, the Applicants request that this rejection be withdrawn.

In the Final Office Action of December 31, 2007 the Examiner argues:

"There are no immunological experiments provided to demonstrate that the claimed proteins or fragments are capable of mounting an efficient immune response and, more importantly, there are no challenge experiments to demonstrate that a person immunized with any one of the claimed anti-vimentin antibodies would be protected." (Final Office Action of December 31, 2007, page 7.)

And:

"It is unclear that one skilled in the art could follow these general guidelines and achieve immunization (protection/treatment) of a human against a pathogen without undue experimentation." (Final Office Action of December 31, 2007, page 7.)

As discussed above, the claims do not require immunity, and are not limited to a mechanism of action.

In view of the above, the Applicants request that this rejection be withdrawn.

CONCLUSION

All grounds of rejection of the Final Office Action dated December 31, 2007 have been addressed, and reconsideration of the application is respectfully requested. It is respectfully submitted that the Applicant's claims should be passed into allowance. Should the Examiner believe that a telephone interview would aid in the prosecution of this application, Applicants encourage the Examiner to call the undersigned collect at (608) 218-6900.

Dated: March 31, 2008

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